



Mitigating approaches in plastic waste management

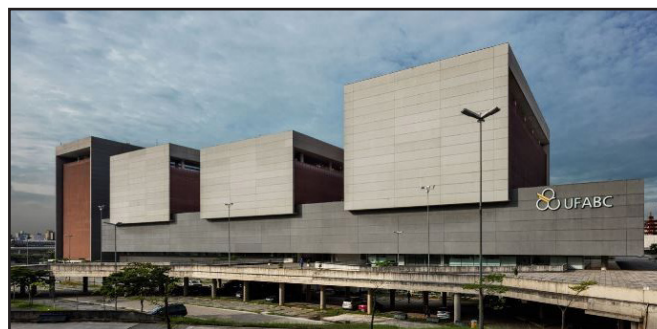
Carlos Alberto Correa¹, MohiniSain²

¹Universidade Federal Do ABC, Núcleo Estratégico de Revalorização de Resíduos - REVALORES, Campus Santo André, State of São Paulo, Brazil

²University of Toronto, Centre for Biocomposites, and Biomaterials Processing, Toronto, Canada

Abstract:

While global capacity of plastic production continues to escalate, recovery of waste seems to be heading into a deadlock¹. Petrochemicals are making use of all resources in order to remain on a business-as-usual approach trying to put blame on consumer malpractices and inefficient collecting schemes to steer away from environmental impact caused by plastic littering spreading all over the Earth³. Lack of proper waste management policies in place is raising / arousing deep concern by governments and public as disposed waste, incineration and littering offsets by large the amount which is efficiently recycled. Recent surveys carried out in the UK points out to the complexities and confusion over plastics recycling whilst Europe and North America faces the consequences of the embargo of plastic waste shipping to Asia and Africa³. It seems that the problem goes much beyond basic understanding of inherent complexities stemmed from polymer chemistry itself and formulation of plastics as a whole⁴. The Resin Identification Code (RIC) which is mostly used for recycling purposes is currently under review by ASTM, as it does not seem to handle any longer the myriad of plastic products which hit the market with multiple functionalities and even more challenging recycling capabilities requirements. On the side of bioplastics from renewable sources, the inception of Green Polyethylene by Braskem in Brazil using sugarcane ethanol is a cradle-to-gate solution which still relies in waste separation and recycling to be fully sustainable. Our research has many unanswered questions which lie on public perception and awareness of compostable plastics benefits over regular plastics, recycling issues and last, but not least importantly the current status of waste management of compostable bioplastics, such as PLA, PHB and Thermoplastic Starch blends. The present paper is mostly intended to discuss the inherent complexities associated with each class of plastic product based upon their polymer chemistry and chemical additives in the formulation in an attempt to forward waste mitigation approaches and at same time review new technology pathways based on waste-to-energy and recovery of polymer basic constituents and monomers by purification and depolymerization⁶. Furthermore the crossroads faced by renewable sources and compostable solutions needs tremendous investment in environmental education once they cannot solve the problem of waste without an investment strategy. Our focus is to highlight the urgent issues and outline



short to long term solutions to cope with the complexity of public understanding with a system approach involving all parties, including getting retail suppliers in the process.

Biography:

Carlos Alberto Correa is a Senior Visiting Professor at Federal University at ABC (UFABC), in the State of Sao Paulo, Brazil. He is also an Associated Professor at the Centre for Engineering, Modelling and Applied Social Sciences and Researcher at the Strategic Nuclei for Waste Revaluation - REVALORES. Carlos has a bachelor degree in Materials Engineering specialized in polymer materials and a PhD in Advanced Materials from Cranfield University in the UK. He has solid academic and industrial expertise in plastics, polymer blends and biocomposites. He has led a long term international cooperation Brazil/Canada on plastics recycling and renewably sourced materials with partnering industries and academia. Current research interests are management of plastic waste, mechanical and chemical recycling, biodegradable and compostable plastics and biocomposites.

Recent Publications:

1. Carlos Alberto Correa, et al; Green-PVC with full recycled industrial waste and renewably sourced content, 2019
2. Carlos Alberto Correa, et al; Considerations on the development of sustainable business models for bioplastics from renewable sources as an alternative to plastics of fossil origin, 2018
3. Carlos Alberto Correa, et al; Identification of business opportunities in the plastic waste value chain, 2018
4. MohiniSain, et al;

Current Trends in Recycling and E-waste Management | May 04-05, 2020 | Vienna, Austria

Citation: Carlos Alberto Correa, Mitigating approaches in plastic waste management, Recycling 2020, May 04-05, 2020; Vienna, Austria